

REMARKS

Claims 1-8 and 12-16 are pending in the present application. Claim 8 has been amended herein. No new matter has been added. Applicant respectfully requests that this amendment be entered and the claim passed to issuance.

Applicant acknowledges with appreciation the allowance of claims 1-7 and 12-16.

Claim 8 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Kubena, *et al.* (U.S. Patent No. 6,580,138, hereinafter “Kubena”) in view of Kim, *et al.* (U.S. Patent Application Publication No. 2001/0005631, hereinafter “Kim”). Applicant respectfully traverses this rejection.

Claim 8, as previously presented, recites an electronic device having an etch stop layer comprising HfO₂, ZrO₂, Al₂O₃ or TiO₂. The etch stop layer is located between a first electrode and a silicon substrate. Applicant respectfully submits that the combination of Kubena and Kim does not teach or suggest the limitations of claim 8.

The Examiner asserts that Kubena discloses a MEMS element having a first and a second electrode that are divided by an air gap, and an etch stop layer between the first electrode and the substrate. The Examiner also asserts that Kim discloses a method for manufacturing an electrode where an etch stop layer comprises Al₂O₃. While Applicant does not disagree with these assertions, Applicant respectfully submits that the combination of Kubena and Kim would not lead one of ordinary skill in the art to the presently claimed invention.

The teaching of Kim refers to an etch stop layer (500) that has two meanings and that includes two sublayers (550, 510). The first sublayer 550 can comprise Al₂O₃ or

silicon nitride, while the second sublayer 510 comprises Ta_2O_5 . The method for manufacturing comprises two etching steps.

In a first etching process (compare Figure 2 and sections 30 to 36) layers 450, 500 and 410 are structured using photolithographic means in combination with a dry-etching process. The dry-etching process can be controlled by etch stop layer 500. Etching is performed by applying a C_4F_8 gas. In a second etching process (wet etching process) (compare Figure 6 and sections 41 to 42) the layer system 500 acts as an etch stop layer in the wet etching process using a “LAL solution or a HF solution.”

Thus, etch stop layer 500 comprises two sublayers 550 and 510 and has two meanings. At first it is used to control an etching process while being etched itself and secondly it should act as an etch stop layer without being etched.

Kubena refers to a MEMS device whose underside and upper side are manufactured separately. Both parts are combined to build the MEMS element afterwards. A SiO_2 etch stop layer is used to protect a substrate from being etched. As both, the upper and the under side of the component are structured separately, there is no need to remove a sacrificial layer that is interposed between two electrode layers. Further, there is no need for an etch stop layer that resists the very strong etching ability of a fluorine-based agent.

An electronic device according to the present invention comprising the above-mentioned etch stop layer provides a refined method for manufacturing where the device is established in one piece only. A skilled person having consulted the Kim document would be confused because the same layer combination is etched away by a fluorine-

containing etch process while other parts of the same etch stop layer resist another fluorine-containing agent in a second etching process.

Even if a skilled person would add the etch stop layer by Kim to the MEMS device disclosed by Kubena he would not gain the profit of producing the MEMS device in one piece. Thus, the present invention is not obvious over the cited prior art. Further, a skilled person would not use Kim's etch stop layer being able to be etched completely during an etching process.

In addition, in order to simplify the issues and bring the case to allowance, claim 8 has been amended to remove the recitation of aluminum oxide. As a result, the amended claim 8 is clearly not obvious over the cited art. An electronic device having an etch stop layer comprising hafnium dioxide, zirconium dioxide or titanium dioxide (only Al_2O_3) is not disclosed in the cited art. Such a device also is not further obvious over the cited art.

In view of the above, Applicant respectfully submits that this response complies with 37 C.F.R. § 1.116. Applicant further submits that the claims are in condition for allowance. No new matter has been added by this amendment. If the Examiner should have any questions, please contact Applicant's attorney at the number listed below.

The Commissioner is hereby authorized to charge any fees that are due, or credit any overpayment, to Deposit Account No. 50-1065.

Respectfully submitted,

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